

AAIB Bulletin No: 10/93

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Category: 1.3

Aircraft Type and Registration: Piper PA-38-112 Tomahawk, G-BGVL

No & Type of Engines: 1 Lycoming O-235 L2C piston engine

Year of Manufacture: 1978

Date & Time (UTC): 16 July 1993 at 1535 hrs

Location: Priory Farm Airstrip, Norfolk

Type of Flight: Private

Persons on Board: Crew - 1 Passengers - 1

Injuries: Crew - None Passengers - None

Nature of Damage: Substantial to nose and right main landing gear, both main planes, fuselage and propeller

Commander's Licence: Basic Commercial Pilot's Licence with IMC, Night and AFI Ratings

Commander's Age: 37 years

Commander's Flying Experience: 392 hours (of which 4 were on type)
Last 90 days - 36 hours
Last 28 days - 24 hours

Information Source: Aircraft Accident Report Form submitted by the pilot

The pilot had planned for a take off from the 1,800 feet grass airstrip at Priory Farm, Norfolk. The actual weather conditions were good with a light wind from 240° to 280°, visibility greater than 10 km, scattered cloud at 1,800 feet and a temperature of 21°C. The pilot elected to depart from Runway 01 which had no slope and grass approximately 2 to 3 inches high made damp by an earlier rain shower. Before departure he paid particular attention to the take-off performance planning satisfying himself that there was an adequate margin between take-off run required (TORR) and take-off run available (TORA).

Starting with the specified TORR of 900 feet (calculated at 20°C, sea level, max AUW, on a hard dry surface, with nil wind and nil slope) the pilot made the necessary corrections to the aircraft's performance as laid down in the 'CAA General Aviation Safety Sense' pamphlet titled 'Aeroplane Performance'.

For a temperature of 21°C and an airstrip elevation of 190 feet he increased the TORR to 1,000 feet. He then corrected for the short wet grass (shorter than 5 inches), increasing the distance by a factor of 1.25, resulting in a revised TORR of 1,250 feet. Finally this figure was factored by 1.33 to incorporate the strongly recommended Public Transport safety margin for scheduled performance group E aircraft. This produced a final TORR, incorporating an adequate degree of safety margin, of 1,663 feet leaving a calculated 137 feet remaining before the aircraft would encounter a 12 feet wide and 6 feet deep ditch at the end of the take-off run. In the hope of increasing the safety margin still further the pilot also chose to take off using the short field technique with the first stage of flap selected.

The pilot reported that during the take-off roll the aircraft initially accelerated well but failed to achieve rotation speed. When the lack of further acceleration was apparent the take off was abandoned. The pilot closed the throttle and applied gentle braking but this had little effect. Brake application was then increased to a maximum but again with little effect.

The aircraft overran the end of the airstrip, crossed the ditch and came to rest in the adjacent field. The emergency shut down drills were completed and the pilot and passenger, who were both wearing full harnesses, vacated the aircraft without injury.

The pilot assessed that the major factor contributing to the accident was the very poor braking achieved on the damp grass. He also suggested that having carried out all the recommended calculations designed to ensure a safe margin in performance he expected the aircraft to perform adequately. Confronted by the unexpected he may well have made his decision to stop too late. His lack of experience on type was considered by him also to have been a factor.